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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/912,781	07/25/2001	Jean Louis Calvignac	RAL920010025US1	5146

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EXAMINER

MAIS, MARK A

ART UNIT	PAPER NUMBER
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2616

DATE MAILED: 03/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/912,781

Applicant(s)

CALVIGNAC ET AL

Examiner

Mark A. Mais

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 04 January 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-3, 5-8, 10-13, 15-18, and 20-22 are rejected under 35 U.S.C. 102(e) as being anticipated by Brewer et al. (USP 6,876,657).
3. With regard to claims 1, 6, 11 and 16, Brewer et al. discloses a system, multiprocessing system, and method for transmitting multiple data frames to *deep packet* processing functions in a given sequence, performing the *deep packet* processing on the frames and forwarding the processed frames to their destination in the same given sequence, comprising:
 - a) an input buffer for receiving frames for processing [Fig. 1, input queues 102 and 103, col. 3, lines 31-37];
 - b) a unit for determining the *deep packet* processing operation to be performed on each frame [Packet Forwarding Engines 13 inspect the packet headers and performs a filtering function on the packets by destination, whether local or external, col. 3, lines 38-47];

c) an arbitrator for assigning each frame to one of a plurality of processing core engines [Fig. 1, ASIC 11 determines exit path selection for all packets that enter processing block 101 (what Packet Forwarding Engine 13 to send to) and inserts a sequence number on each packet, col. 3, lines 24-29];

d) an output buffer for collecting the processed frames [Fig. 1, reorder queues 105, 106, and 107 combine the payload with the header information, col. 6, lines 1-4], and

e) a sequencer for forwarding processed frames from the output buffer to their destination in the same order as the frames are received by the input buffer [Fig. 1, packet ordering block 108 examines reorder queues 105, 106, and 107 for sequence numbers and sends the packets out in the original order, col. 6, lines 1-20].

4. With regard to claims 2, 7, 12 and 17, Brewer et al. discloses that the input buffer is contained in a Data Moving Unit [Fig. 1, router system 10, col. 3, lines 20-22].

5. With regard to claims 3, 8, 13 and 18, Brewer et al. discloses that the output buffer is also contained in said Data Moving Unit [Fig. 1, router system 10, col. 3, lines 20-22].

6. With regard to claims 5, 10, 15 and 20, Brewer et al. discloses that each core engine has an associated memory for storing a frame assigned to the engine until the engine is free to perform the operation on the frame [each Packet Forwarding Engine 13 inherently has it's own memory buffer on accepting different-sized and different-rate packets from either of queues 102 or 103 and before performing the filtering function].

7. With regard to claim 21, Brewer et al. discloses a system for transmitting multiple data frames to *deep packet* processing functions in a given sequence, performing the *deep packet* processing on the frames, and forwarding the processed frames to their destination in the same given sequence, comprising

a) an input buffer for receiving frames for processing, having a buffer capacity of at least twice the size of the largest frame size, said buffer incorporated into a Data Moving Unit

[Packet Forwarding Engines 13 inspect the packet headers and performs a filtering function on the packets by destination, whether local or external, col. 3, lines 38-47; Packet Forwarding Engine 13 handles either 2 less-than-200 byte inputs from queues 102 or 1 greater-than-200 byte input from queue 103, col. 4, lines 14-18, and col. 4, line 45 to col. 5, line 14];

b) a Frame Header Processing Unit for determining the type of *deep packet* processing operation to be performed on each frame **[Packet Forwarding Engines 13 inspect the packet headers and performs a filtering function on the packets by destination, whether local or external, col. 3, lines 38-47];**

c) a plurality of processing core engines wherein each core engine has an associated memory for storing a frame assigned to the engine until the engine is free to perform a *deep packet* processing operation on the frame **[Packet Forwarding Engines 13 inspect the packet headers and performs a filtering function on the packets by destination, whether local or external, col. 3, lines 38-47];**

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d) an arbitrator for assigning an ascending frame sequence number to each frame and for forwarding each frame to one of the core engines for deep-packet processing [Fig. 1, ASIC 11 determines exit path selection for all packets that enter processing block 101 (what Packet Forwarding Engine 13 to send to) and inserts a sequence number on each packet, col. 3, lines 24-29];

e) an output buffer for collecting each frame as it is processed by a core engine, said buffer comprising a portion of the Data Moving Unit [Fig. 1, reorder queues 105, 106, and 107 combine the payload with the header information, col. 6, lines 1-4]; and

f) a sequencer for forwarding processed frames from the output buffer to their destination in the same order as they are received by the input buffer [Fig. 1, packet ordering block 108 examines reorder queues 105, 106, and 107 for sequence numbers and sends the packets out in the original order, col. 6, lines 1-20].

8. With regard to claim 22, Brewer et al. discloses a method of transmitting multiple data frames to *deep packet* processing functions in a given sequence, performing the *deep packet* processing on the frames and forwarding the processed frames to their destination in the same given sequence, comprising the steps of:

a) receiving frames into an input buffer that is incorporated into a Data Moving Unit, said buffer having a buffer capacity of at least twice the size of the largest frame size to be processed [Packet Forwarding Engines 13 inspect the packet headers and performs a filtering function on the packets by destination, whether local or external, col. 3, lines 38-47; Packet Forwarding Engine 13 handles either 2 less-than-200 byte inputs from queues 102 or 1

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greater-than-200 byte input from queue 103, col. 4, lines 14-18, and col. 4, line 45 to col. 5, line 14];

b) determining the type of *deep packet* processing operation to be performed on each frame, using a Frame Header Processing Unit **[Packet Forwarding Engines 13 inspect the packet headers and performs a filtering function on the packets by destination, whether local or external, col. 3, lines 38-47];**

c) assigning each frame to one of a plurality of processing core engines, each frame being stored in a memory associated with a core engine until the engine is free to perform the processing operation on the frame **[Fig. 1, ASIC 11 determines exit path selection for all packets that enter processing block 101 (what Packet Forwarding Engine 13 to send to) and inserts a sequence number on each packet, col. 3, lines 24-29];**

d) performing at least one deep-packet processing operation on each frame **[Packet Forwarding Engines 13 inspect the packet headers and performs a filtering function on the packets by destination, whether local or external, col. 3, lines 38-47];**

e) collecting the processed frames in an output buffer that is incorporated into a Data Moving Unit **[Fig. 1, reorder queues 105, 106, and 107 combine the payload with the header information, col. 6, lines 1-4];** and

f) sequencing and forwarding processed frames to their destination in the same order as received into the input buffer **[Fig. 1, packet ordering block 108 examines reorder queues 105, 106, and 107 for sequence numbers and sends the packets out in the original order, col. 6, lines 1-20].**

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 4, 9, 14 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brewer et al. as applied to claims 1-3, 5-8, 10-13, 15-18, and 20-22 above, and further in view of Dockser (USP 5,860,119).

11. With regard to claims 4, 9, 14 and 19, Brewer et al. does not specifically disclose that the unit for determining operation comprises a Frame Header Processing Unit having a buffer capacity at least twice the size of the largest frame to be processed. However, Dockser discloses a packet FIFO that makes more effective use of a packet-data channel [col. 1, lines 8-10]. Greater-than-one-maximum-sized-packet capacity buffers reduce packet latencies [col. 2, lines 39-58]. Dockser discloses FIFOs, which are at least twice the maximum-sized frame length [col. 3, lines 38-43; col. 4, lines 6-17]. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the input queues of Brewer et al. to have a capacity of at least twice the largest frame received because such a double/triple/quadruple-sized buffer increases speed and efficiency [col. 3, lines 5-7] and makes better use of a packet-data channel [col.3, lines 40-43].

Response to Arguments

12. Applicant's arguments filed January 4, 2006 have been fully considered.
13. Applicants argue that the independent claims (1, 6, 11, 16, 21, and 22), currently amended, recite "deep packet" processing, which Applicants argue is different than processing disclosed in Brewer et al. (described as merely "processing") [**Applicant's Amendment dated January 4, 2006, page 9, lines 4-18**]. Applicants further point to the current specification, page 1, lines 10-12, to differentiate the "deep packet" processing from the packet processing which occurs in Brewer et al. [*See Id.*]. Examiner respectfully disagrees.
14. With respect to independent claims 1, 6, 11, 16, 21 and 22, Brewer et al. discloses that the Packet Forwarding Engines 13-0 through 13-3 perform filtering functions that are performed after inspection of the packet header [**paragraphs 3, 8, and 9 above**]. Thus, after Packet Forwarding Engines 13-0 through 13-3 inspect the packet headers, they can also determine if the packet is intended as a local destination within the router and, accordingly, send the packet to the central processor for further processing (thus, a filtering function) [**col. 3, lines 38-47**]. This deep packet process—a filtering function—is also disclosed in Applicant's specification [**"...deep-packet processing functions, such as...filtering...[are performed]", (page 1, lines 15-16), "...after processing the frame header and determining what operation needs to be performed...[i.e., filtering]", (page 5, lines 2-4)**].

15. Applicants argue that claims 4, 9, 14, and 19, relating to the size of the buffer capacity, is not disclosed by the buffer function performed by the packet forwarding engine 13 in Brewer et al.

[Applicant's Amendment dated January 4, 2006, page 10, lines 8-13]. Specifically, Applicants argue that they use a buffer at least twice the size of the largest frame to be processed **[See *Id.*]**. Applicant's arguments with respect to the rejection of claims 4, 9, 14, and 19 under 35 U.S.C. 102(e) as being anticipated by Brewer et al. have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new grounds of rejection is made under 35 U.S.C. 103(a) as being unpatentable over Brewer as applied to the claims 1-3, 5-8, 10-13, 15-18, and 20-22, and further in view of Dockser **[see paragraph 11 above]**.

16. Applicants argue that while Brewer et al. deals with exception packets, their invention makes no allowances for exception packets and, therefore, all incoming data frames entering the reception buffer must be maintained in a strict order **[Applicant's Amendment dated January 4, 2006, page 10, lines 17-21]**.

17. With respect to applicant's claim of *not* using exception packets [or using a strict ordering], Applicant's arguments fail to comply with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references.

18. Alternatively, in response to applicant's argument that the reference fails to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., *not* using exception packets [or using a strict ordering]) are not recited in the rejected claims.

Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Conclusion

19. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

(a) Laor et al. (USP 6,147,996), Pipelined multiple issue packet switch.

(b) Biblic et al. (USP 6,947,430), Network adapter with embedded deep packet processing.

(c) Ishimura et al. (USP 6,693,905) Data exchange unit.

20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark A. Mais whose telephone number is (571) 272-3138. The examiner can normally be reached on 6:00-4:30.

21. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seema Rao can be reached on (571) 272-3174. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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22. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MAM

March 2, 2006

Seema S. Rao
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